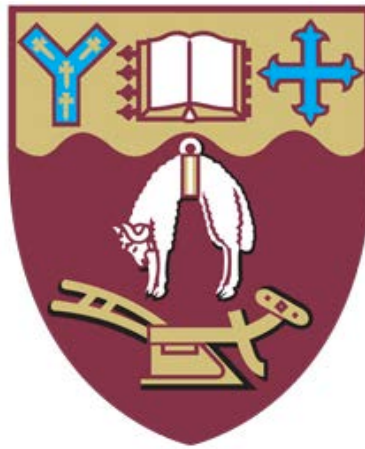


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Antarctic Climate Change Security

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Abstract:

Climate change is an enormous issue that affects many facets of human civilisation. Antarctica is a continent that is at threat of significant change in a warming climate. The Antarctic Treaty System (ATS) is a unique set of agreements that govern the Antarctic. In the absence of sovereignty it becomes difficult to take leadership over common resources leaving them vulnerable to exploitation. Human settlement is an eventual consequence of a warmer climate and species invasion and biodiversity modifications are results of a shift in the ecological borders. These factors among others place pressures on the ATS and ultimately strain the security status quo of the region. Security can only remain if the ATS adequately deals with the impacts of climate change and as a global community those challenges are mitigated through a broader response to the security risks of climate change.

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Focus Questions

How is climate change occurring in Antarctica?

What affects Antarctic security?

Is the ATS sufficiently placed to address climate change?

To what extent does Climate Change affect Antarctic Security?

Introduction

Climate change is widely accepted as one of the greatest challenges facing humankind. Global leaders have been negotiating the methods necessary to alleviate and address climate change for decades. Much of the science has firm foundations and now the resolution of the data sets is being refined such that projections can be made about annual changes instead of on a larger timescale. This will aid policy to inform decision makers about the impacts on a scale that can be tangible within their term of office. However, the impacts on a broader policy focus have been identified for a considerable period of time. In an Antarctic context, many of these impacts are shared in principle with other areas of the world. What makes Antarctica different is the governance and wilderness aspects which make the continent unique. Climate refugees are unlikely to be an immediate threat to Antarctica whereas other areas of the globe already have displaced peoples as a consequence of climate change. Resource exploitation and settlement are challenges that are exasperated by climate change and the instruments governing Antarctica do not have all the tools necessary to prevent these risks. The security of the region is thereby questioned given the strain caused by climate change.

Defining 'security'

Security is a broad term that encompasses a myriad of disciplines. Security is often thought of in regards to military and intelligence security. National integrity and the preservation of the state are the prerogative of the security sector. However, security has developed in the post-9/11 world. Security includes resources, the environment and the economy. All of these factors affect national security and are thus included

within security studies. Antarctic climate change has the capacity to inflict a significant shift in the security paradigm that currently exists in the continent. As a predominately ice bound continent, should the climate warm a consequence is improved ease of access. This will invariably make Antarctica a place that has a lower sunk cost to visit meaning that nations and companies can visit without the same expense that they currently incur. The opening up of Antarctica is a predominant consequence of climate change and irrespective of human visitation; the management and preservation of the Antarctic ecosystems will become priorities as they come under threat from climate adaption and invasive species.

Resources

Antarctica is one of the largest landmasses on the planet. It is also relatively unexplored and unexploited (Braun, Hertel & Mustafa et al. 2014). The total amount of resources and the location of significant deposits have not been definitively determined and the unknown qualities of the continent make it an attractive place to speculate and explore should the prospect of resource exploitation become a reality (Hemmings A. 2009). The world's population is increasing and the demand for higher quality lifestyles is becoming the norm across the developing world. There will be significant resource pressures should developing nations be in a position to provide the same quality of living that many developed Western nations currently have for their citizens. Large unexploited landmasses like Antarctica will become attractive locations to vie for any potential resources that can be extracted such as mineral resources and fisheries.

Mining

Resource exploitation has been a concern of the Antarctic parties given the relatively unspoilt nature of the continent. The Convention on the Regulation of Antarctic

Mineral Resources Activities (CRAMRA) was negotiated to prohibit the extraction of mineral resources. It was ultimately integrated into the Protocol on Environmental Protection to the Antarctic Treaty (the Protocol). Consequently, no mineral resource extraction has been reported to have occurred. Parties are still able to develop techniques and implement research agendas that advance the skillset necessary to extract mineral resources in the extreme Antarctic environment. Drilling through the ice and into sediment on a drifting platform for the purposes of extracting a sediment core utilises expertise that is used in the mineral extraction industry. Although the purpose of core drilling research is not to covertly develop mineral extraction technology, it still provides experience that could inform future extraction. Nations such as the Russian Federation have already indicated a preference to explore and not rule out mining.

As the climate changes so too does the accessibility of the continent. Sea ice behaviour is undergoing observable changes on a near yearly basis (Vinnikov, Cavalieri & Parkinson, 2006). The ability to send ships closer to the pole will become easier if the access has a wider window of opportunity.

Resource scarcity is a global issue. Exploration was historically partly driven by the need to acquire and claim new resources. As a frontier continent, Antarctica is an area which will likely always face the pressure of resource claims. If the world cannot transition to a low carbon economy then the need to extract fossil fuels will persevere. As reserves deplete the need to identify and extract new sources of fossil fuels will become a priority.

Fishing

Antarctic fish stocks are currently managed through the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR). A balance between sustainable use and reasonable harvest has created a tension given that the science surrounding the marine ecosystems and the target fish species is still developing. The marine environment is affected profoundly by climate change. Ocean currents throughout the world are interlinked and the circumpolar current has been identified as a key driver of deep water cooling (BAS. 2016). As the climate varies, so too will the physics of the marine environment. Species will be forced to adapt or face adverse consequences. Given that many of the world's fisheries are already overexploited, the need to provide food to a growing global population exasperates the pressures on the marine environment (Hughes and Convey, 2010). Fishing fleets already come from many corners of the globe, some from the Northern hemisphere. Vessel technology has advanced significantly with processing ships and support vessels that enable a fleet to remain at sea for prolonged periods of time and take a far greater quantity of fish. Scarcity increases price which makes the Antarctic fisheries a lucrative opportunity. Tooth fish are currently some of the most valuable fish per kilo in the world.

Biodiversity

Antarctica has a rich biodiversity and is not the barren wasteland that has been perpetuated in some media. Rather, the organisms that inhabit Antarctica are highly adapted to their environment and many of them rely on the marine ecosystems that surround the continent. The seas around Antarctica are some of the richest in the world and have been relatively unspoiled (Convey, Hughes & Tin, 2012). However, this makes them vulnerable for a number of reasons. Human beings have a natural

fascination and curiosity. Visiting a remote and inhospitable place like Antarctica is attractive to those whom are eager to visit a place seldom visited. It is also one of the few places on the planet that nature has yet to view human beings with concern which facilitates some unique interactions with Antarctic species that are not possible on other continents. Climate change places adaptive pressures on species throughout the world and viewing Antarctic species will become easier as access to the continent improves. The biodiversity may suffer from climate change as the species struggle to adapt and the security of their future may be called into question. New species will instead venture forth into areas that were previously inaccessible or too inhospitable for them to establish a presence.

Tourism

One of the most significant developments in Antarctica recently has been the tourism industry. Every year the number of visitors to Antarctica has increased with the major contributor being the tourism operators (Lamers, Liggett & Amelung, 2012). Areas on the peninsula have modified over the past few decades which has helped enable smaller vessels and lower ice rated vessels to explore. Consequently, new charter vessels and operators have emerged and the capacity of the vessels tailors to all manners of voyages. Although there is an industry mandated limit of 500 passengers, this number is unlikely to be stable in the long term if climate change makes access to the continent easier. Larger commercial operators that run significant cruise vessels in other regions of the planet may begin to scope out the possibility of running polar tours. The potential to capitalise on the continent is increased if the ability to access it is less demanding. The desire to visit somewhere that is different from anywhere in the world will ensure that there will always be a demand for Antarctic tourism. The experiences that can be had in Antarctica are not

replicable in other areas of the globe and from a cruise operator standpoint is provides a unique experience that can be marketed. Recently there has been a commercial airliner from Icelandic Air arrived in Antarctica bringing tourists onto the interior of the continent. Airliners can reduce the need to cater for tourists in the way that is necessary on cruise ships. Passengers do not need to have their own separate berths and long-term catering. A supplement to airliner visitation may be hotels and places to overnight on the ice. Whilst this has not eventuated yet, it is not inconceivable that in climate change may make this course of action more attractive and feasible for tourism operators.

Non-Native Species Invasion

Species do not follow lines drawn on a map, rather the differing local climates influence the types and number of species inhabiting an area. As the climate changes so too do the ecosystem boundaries. Species that currently are not capable of inhabiting Antarctica will soon be able to colonise the parts of Antarctica that are warming including the marine environment. The sub-Antarctic islands already are at risk of becoming inundated with invasive species as is the marine environment with the advance of North Atlantic Spider crabs (Hughes and Convey 2010). With an increase in human visitors, whether tourists or scientists, the risk of invasive species becoming introduced to the untouched Antarctic environment is elevated. Without an adequate system of governance, it will be difficult to attribute liability and instrument the necessary remedies required to mitigate and ultimately restore affected ecosystems. Whilst the direct human driven introduction of species can be managed through quarantine measures and visitor restrictions in addition to monitoring, the natural affects are incredibly difficult to prevent (SCAR, 2016b). Species can be dispersed through migratory behaviours and with a modified climate

the migratory pathways of species is likely to change. This could result in the transport and colonisation of invasive species in areas of Antarctica that would otherwise be impossible for those species to inhabit. As climate change is not restricted to Antarctica and the myriad of its drivers are global and primarily industrial, actions in Antarctica to mitigate climate change are comparatively futile to efforts that nations can take to curb their greenhouse gas emissions. Identifying causal drivers of climate change in Antarctica that are enabling species invasion may be possible but attempting to prevent these changes will not be possible if the action is restricted to Antarctica. Therefore the security of Antarctic species is determined not only through actions of human visitors to the continent, but also the overwhelming contributions to climate change from nations overseas.

Political

There are always going to be political challenges to Antarctic security given the multilateral nature of the governance structure. Political concerns will most likely be driven domestically and policy in Antarctica may be expressed as an extension of domestic policy (Dudeney and Walton, 2012). Climate change may be a source of political collaboration in Antarctica and an opportunity for a firmer security in the future. However, political factors could exasperate existing ideological differences and expose frailties in international relationships. Disputes could be driven through external factors and security matters subject to agreements in other theatres of diplomacy beyond Antarctica. Establishing a more extensive presence in Antarctica will become easier with climate change. This raises new challenges to the security paradigm in Antarctica. The rule of law may become an issue as settlements are established and nationalities reside within the same domestic environment. Parties that have a claim may seek to further their presence through these settlements,

which could lead to an influx of people to the continent. Non-claimant parties and new parties are building bases in regions that already have a considerable human presence. This places new pressures on the environment and strategic concerns for nations that may not necessarily agree with each other's national strategic objectives in Antarctica and beyond.

Sovereign Claims

The Antarctic Treaty has been celebrated as a document that aptly dealt with competing powers in a succinct manner. Article IV recognises the claimant states claims and prohibits any further claims from being put forward. Whilst the claims are to be recognised, the Treaty does not grant territorial rights or sovereign power. This has led the ATS to be considered one of the most important security developments of the Cold War and from a New Zealand perspective the Antarctic Treaty is a priority security agreement (Hemmings, 2008). Without the ability to exercise sovereignty or the power of exclusion, tensions that may have arisen from disputes can be addressed at an Antarctic Treaty Consultative Meeting and decided through consensus. Ideally this would prevent the rise of superpowers from obtaining disproportionate influence that could be exercised unduly upon smaller parties to the agreement and in a manner that could have precluded the involvement of new parties to the ATS. In practice, there is still soft power diplomacy at play given that some nations have consultative status whereas others do not. Given that the claimant powers had consultative status from the inception of the ATS, they have had the time to consolidate their presence and diplomatic networks within the region. This has had a somewhat chilling effect on the rise of new parties to the agreement such as the non-cooperative nature that Western powers adopted when dealing with the Iranian Antarctic program.

Whilst Article IV has prevented sovereign power from eventuating, claimant nations have still undertaken measures to implement a degree of control and national identity within their sectors. This has manifested itself through the naming of geographical locations. Particularly on the Antarctic Peninsula which is subject to three overlapping claims between the United Kingdom, Chile and Argentina, there has been considerable nationalistic behaviours in terms of naming key locations after national leaders as well as the desire to create settlements. Climate change will invariably protract these kinds of territorial gestures. While they are not usually recognised outside of the state that is posturing, it still engenders an atmosphere of ownership. Given that climate change is likely to increase the accessibility of the continent, in particular the Peninsula, ownership and governance of resources is likely to become exasperated by the absence of sovereign directive. As the continent is primarily serviced through maritime logistics, although personnel and lighter freight is deployed via airborne lifting, the need to conduct patrols in order to safeguard treaty measures could increase. New icebreakers are scheduled for construction and deployment in the coming decade. The prohibition on military activities in Article I should prevent fleet movements and the allocation of line warships to the Antarctic region. However, should climate change enable a greater degree of activity including a more substantial human presence, the need for law and order will place strain on the security of the continent. A military confrontation is unlikely in the midterm given the international condemnation that such action would be subject to, however resource activities such as illegal whaling and illegal unregulated unreported fishing will strain the soft powers that are available.

Base Establishment

New bases are being constructed every year. In particular are the full year bases as they require a substantial investment into supporting infrastructure and a desire to maintain a longer term presence that just through the summer seasons. Parties have little restriction on the sites that they are able to build a new base provided that they have the support of the Committee for Environmental Protection and approval at an ATCM. There is still a trend to build national bases that are non-collaborative with other parties. There are only two facilities that are operated on a joint program basis (Hemmings 2011). Given that the parameters for activity in Antarctica are for peace and science, non-collaborative bases are a costly direction to follow and ultimately generate a greater impact on the environment. Climate change will unlikely be an impedance to building new Antarctic bases. Rather, the climate may become more amenable to settlement. This could create greater tensions between parties as they start to inhabit areas close to one another but without a cooperative narrative between them. Human settlement is a serious challenge to Antarctic security. Chile and Argentina already operate quasi civilian settlements called Villa las Estrallas and Esperanza which accepts residents to permanently live for non-scientific reasons. With any human settlement comes the need to implement order and the rule of law. As there are myriad of Antarctic parties, there is unlikely to be a universal rule of law that can be exercised amongst the different Antarctic settlements given the significant cultural and governance regimes that each party possesses in their domestic affairs. Transplanting their rule of law to Antarctica will be problematic. This is amplified if the settlements are in close proximity to one another or they share residents of differing nationalities. A Chilean citizen is subject to Chilean law but if they were to visit or reside in a future British Antarctic settlement, they would

not be under British rule of law as there is no jurisdiction that can be exercised without sovereign powers. Early New Zealand was unruly and the implementation was in part driven by the demands of iwi that the Crown implement a method of control over their settlers whom were not behaving within Aotearoa. The Treaty of Waitangi is contentious for many reasons but the point is that the Treaty was between the Crown and iwi. In Antarctica, there are many more cultural and national identities that would have to be placated should a domestic environment emerge from future Antarctic settlements.

The establishment of bases to provide a means to test military equipment is a concern in the Antarctic. With very low population densities and clear skies, being located in Antarctica beneficially enhances the development of communications and satellite technology. These technologies are often utilised in military applications and nations that are constructing new bases in the interior may come under scrutiny if they cannot justify the existence of their base. Article I prohibits military manoeuvres, military bases and the testing of military hardware but does not prevent that hardware from being used for scientific purposes. Article VII ensures that prior notice must be given to other Consultative Parties if military hardware is present on the continent. Whilst this may alleviate some concerns over the presence of strategic military hardware, it would still be possible for a nation to place hardware on the continent if they considered it civilian. If it was then used for a military application but was peaceful in nature or not a weapon that there would be no breach of the Treaty. Climate change aids in the creation of these facilities as the ability to logistically service them is easier in a warming climate.

How do the Parties Address the Matter of Security in Face of a Changing Climate?

Addressing climate change is one of the most pressing international issues.

Antarctica is already under pressure from climate change and preventing security challenges from growing may become one of the key features of future meetings.

However, the tools and apparatus of the ATS were not created at a time when climate change was considered as such an important issue. That does not preclude the ATS from dealing with climate security challenges, on the contrary there are many mechanisms that have the capacity to prevent certain security issues from developing. In addition to this are the options that states may have available to them outside the ATS. Whilst these differ from state to state, soft power and diplomatic tools share commonalities between nations.

Within the ATS

The Antarctic Treaty is arguably the first disarmament agreement agreed during the Cold War. Its value as a security agreement cannot be overstated. Prohibiting military activity in Antarctica creates a considerable barrier for military driven security issues from developing into serious matters as breaching this part of the Treaty would not be taken lightly by the parties to the agreement as it would represent a definitive shift away from the principles of peace and science that underpin the ATS. Mineral resource exploitation is expressly prohibited by the Protocol and fishing is regulated by CCAMLR. Whilst there is still an information gap surrounding the vulnerability and sustainability of the Antarctic fisheries, progress is being made by industry to identify the underpinning science that can inform catch limits. Illegal fishing has been successfully curbed through international cooperation between states party and non-party states. Despite this, illegal whaling still persists

and the ATS is not equipped to deal with the matter with any sufficient force resulting in a diversion to the ineffectual International Whaling Committee. Should other threatened species start to become desirable for harvest, the ATS will need to become proactive in prohibiting any action that threatens species. Seals have become abundant and there is little consensus on if their numbers are more than pre-sealing times and if their numbers are detrimental to associated ecosystems. The ATS has historically managed to put in place agreements to prevent exploitation and parties will need to remain motivated and proactive in response to climate driven resource strains.

The ATS will always exhibit a tension from the consequences of Article IV. Without sovereignty there is no territorial rule of law besides that decided at an ATCM with consensus. This effectively grants all ATCPs a right of veto and non-party states are exempt from any decision. Claimant states will unlikely give up their pursuit of their claims despite some nations like New Zealand offering to do so previously. The status quo will only last as long as consensus can always be reached. At the moment there has yet to be an issue of such gravity that a lack of consensus will result in nations acting at odds with the ATS. Until a greater degree of equity is established in Antarctica and perhaps a new process of consensus is established, the threat of rogue parties to Antarctic security will remain a possibility if climate change creates opportunities that are on balance more beneficial than costly to pursue in breach of the ATS.

Outside the ATS

The international system is complex and developing daily. Affairs in one part of the world can affect what happens in other parts of the globe. Challenges in the Crimea or tensions in the South China Sea can modify the diplomatic behaviours of nations

in other aspects of diplomacy. Bargaining and making punitive decisions are not an uncommon occurrence even though it is usually inferred as opposed to being expressly enforced. The Ross Sea Marine Protected Area has had considerable modification from its initial inception in order to gain acceptance and agreement from the parties. Much of the opposition may not necessarily be related to affairs in Antarctica. Rather, the actions that nations such as the United States take in terms of its attitude towards other nations affairs elsewhere in the world can cause diplomatic recourse in Antarctica. Allowing a nation to concede a perceived victory in Antarctica when that nation is taking punitive action in another diplomatic matter can be cause difficulties in the conscience of diplomatic decision makers. The high turn over of diplomats in Antarctic affairs does not alleviate this issue given that personality politics can assist adversarial states to come to an agreement if their diplomats are jovially familiar with one another. Developing those relationships will become an important facet to addressing climate security. Climate change is an issue that all nations will be affected by and it is not an issue isolated to just a few states. Facilitating a greater degree of international equity may assist in alleviating grievances that some states harbour against others particularly the developed nations whom make up the claimant states.

Conclusion

Antarctic security will undoubtedly be affected by climate change. Any modification to the environmental conditions will place strains on existing ecosystems and create new processes and opportunities to adapt and respond. Consequently, the ATS will need to utilise the tools that it currently possess as well as soft diplomacy to address these new challenges. It is not the first time that Antarctica has been proactive in

dealing with pressures or a world leader. Given that the continent is already relatively preserved, any change that is made should be to keep the status quo rather than undermine the provisions that have guided the relative success of the ATS thus far.

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